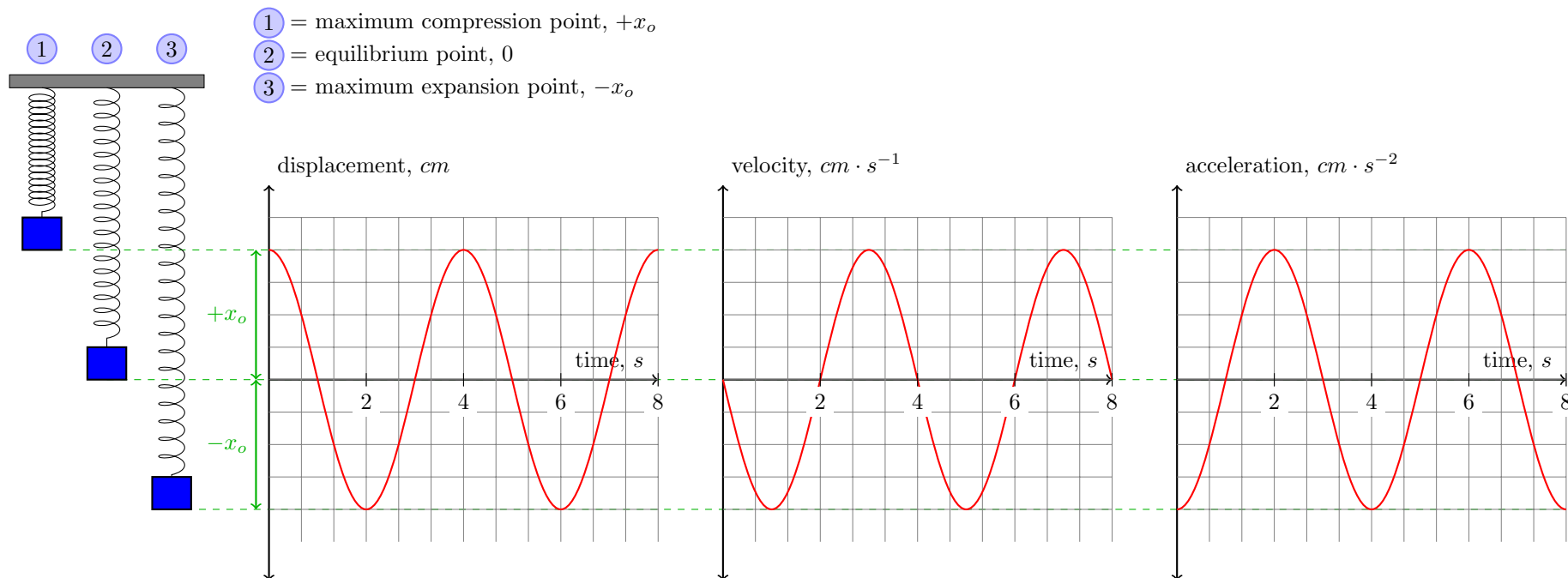


4.1.5 - Kinematics Formulas of SHM Oscillations



- Angular frequency, ω , measures the (# of revolutions) per (1 second)
- Remember that $2\pi f = \omega$
- We denote the maximum displacement as x_o (at 0, 2, 4, 6, 8 seconds)
- Thus the equation of this line is:

$$x = x_o \cos \omega t$$

- From the gradient of the displacement/time graph, we can calculate the velocity
- We denote the maximum velocity as v_o (at 1, 3, 5, 7 seconds)
- Thus the equation of this line is:

$$v = -v_o \sin \omega t$$

- From the gradient of the velocity/time graph, we can calculate the acceleration
- We denote the maximum acceleration as a_o (at 1, 3, 5, 7 seconds)
- Thus the equation of this line is:

$$a = -a_o \cos \omega t$$
- When displacement increases, acceleration increases proportionally and negatively:

$$a \propto -x$$